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\$110

Bob Schwimmer, N3FAW

WANTED: 4MB SIMMS 1x9MB
(30 pin) 70ns
Matthew Steger, N3NTJ (814) 864-3809

WANTED: VHF/UHF POWER/SWR Meter
Matthew Steger, N3NTJ (814) 864-3809

What This Club Needs is a Few Good Elmers

An ELMER is a ham radio operator who can remember when he thought getting an FCC Amateur License was something he wanted to do, but knew nothing about how to obtain one until a fellow ham took him by the hand and got him going in the right direction by simply lending him a manual or instructions on code or helping him, or she, to build a strange looking contraption to listen to code or whatever.

Ave there any of you out there in this club that would serve as an Elmer to some struggling person on getting started in Amateur radio, or in helping them with antenna problems, or just guiding them along the path that you think they should be going. And at the same time teaching them how to miss some of the pitfalls that you fell into.

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SB-220 LINEAR AMPLIFIER, Heathkit 2kw
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PACKET STATION
TNC, MFJ 1270C TNC-2 Controller
with MFJ software and interface cable
DUAL BAND HT, Yaesu FT470 with PA-6 mobile adapter and 12 volt gel cell
COMPUTER, Packard-Bell 8088-XT Clone, with 5 1/4" floppy, 30 meg hard drive, Ad-Lib compatible sound card, 640k ram, CGA monitor (switchable between green and color)
QUAD ANTENNA, 5 element home brew (QST Jan 95)
\$400 for all
Jerry Seidl, AA3II, 454-5619

HF TRANSCEIVER, Yaesu FT-840
with general coverage receiver
excellent condition
with optional 500 hz cw filter installed
includes microphone & manuals
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Chris, KB3A, 814-474-1211
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Drop a card with your classified to
Dave Ross N3PYH
639 East 29th Street
Erie, PA 16504-1208

Give me a call if you are willing to serve in this way, and if we can get three or four Elmers, we will be on our way.

Now if there are any people out there that could use and Elmer, let me know and we will try and get one assigned to you. Do not take this lightly, this program is not the be a hand-out nor are you to quit after the going gets a little tough. You will get out of ham radio just about what you put into it.

This can be a great way of helping people and I think in a sense that is what ham radio is all about along with developing your skills.

73

Don Eller, K3GYD (814) 456-3042



THE OFFICIAL JOURNAL OF THE RADIO ASSOCIATION OF ERIE

QUA-RAE

IN THIS ISSUE...

The President's Corner
ARRL/VEC Report
Minutes from July Meeting
Sats and Contesting
Public Service
ARES/Skywarn
Classifieds
and more....

AUGUST 1995

Hamfest
PA QSO Party Dinner/Symposium
September 9

Radio Association of Erie

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Presidents Corner

I hope everyone is staying cool! Hi Hi. Well, we are just about ready to start the Elections for the new year, I hope we can get a good nomination. Just remember you have until the October meeting to put your nominations in for the November Elections.

I would like to say thank you to all the members who came to the club picnic on July 22, 1995. We all had a great time. We will be getting ready for our Christmas party which will be on Friday, December 1, 1995.

I am very happy to see that we are going to get our "Elmer" back in the club. We need these people so that all of our new operators have someone they can go to if they need help with anything. Even some of us older ones need help from time to time.

VE Report

Submitted by W3CG, Norma Vanderhoff, ARRL VE Liaison

The July test session at Villa Maria resulted in Nicholas Cooling N3TOZ of Girard passing Technician Plus, and Jason Zabrowski of Wattsburg, who passed Technician.

A local from Erie also passed Technician but declined to sign the consent form for publishing the information.

This was the first refusal we have had and because of the mistaken view that it would be free advertising for the FCC.

Remember that there is not much time before Hamfest is here. Debi needs baked goods and help in the kitchen. If you can be of any help, be it helping to set up or even cleaning up, then come and join the fun we have every year getting our Hamfest set up.

It is getting just a bit warm up here in the ham radio room so I think this will have to be very short. Remember that the next Hamfest meeting is at 6:00 p.m. at the Red Cross on August 3, 1995. The general meeting will be at 7:30 p.m. at the Red Cross.

Stay cool 73's
Sue N3LPO

Partial upgrades were also gained by other candidates. An upgrade at Gannon during their last test session was Wayne Pengelly KB8SZG of Mentor, Ohio, who passed Amateur Extra.

The next Villa Maria test session will be held on Saturday, August 5th at 8 a.m. As well as exams being given on the first Saturday at Villa Maria, testing will also take place at the RAE Hamfest on the following Saturday.

One Man's Junk...
Hamfest time is rapidly approaching!
Look around the shack, basement, attic for your unused items gathering dust. Donate salable items for the RAE 1995.
Call Bob Sherman KB3JLY 866-2424 or Bob Schwinmer N3FAW 866-3027
DONATIONS ARE TAX DEDUCTIBLE. THE RAE IS IRS APPROVED ASK FOR A LETTER FOR NEXT YEAR'S TAX RETURN!
RADIO ASSOCIATION OF ERIE
WOW!

PUBLISHED MONTHLY BY THE RADIO ASSOCIATION OF ERIE
THE RADIO ASSOCIATION OF ERIE IS A NON-PROFIT CLUB SERVING THE TRI-STATE AREA BY PROVIDING EMERGENCY COMMUNICATIONS DURING A CIVIL DISASTER, AS WELL AS PROVIDING COMMUNICATION SUPPORT FOR PUBLIC SERVICE EVENTS. THE CLUB MEETS AT 7:00 THE FIRST THURSDAY OF EVERY MONTH AT THE RED CROSS CHAPTER HOUSE, 4961 PITTSBURGH AVENUE, ERIE, PA. FOR MEMBERSHIP INFORMATION CONTACT BOB SCHWINMER, N3FAW AT 866-3027.
THIS NEWSLETTER IS EDITED BY DAVE ROSS, N3PYH. SUBMISSIONS ARE ACCEPTED AND ENCOURAGED. PLEASE MAKE ALL SUBMISSIONS VIA A 5 1/2" OR 3 1/2" PC COMPATIBLE FLOPPY, IF POSSIBLE. TYPEWRITTEN SUBMISSIONS WILL BE ACCEPTED IF PC DISKS ARE NOT AVAILABLE. FOR INFORMATION CALL 454-5407 EVENINGS OR WRITE TO:
DAVE ROSS
N3PYH
639 EAST 29TH ST.
ERIE, PA 16504-1208
OR N3PYH@AOL.COM
THIS IS YOUR NEWSLETTER. PLEASE CONTRIBUTE!

Club Calendar

AUGUST 1995 Notes: SE = Special Event, HF = Hamfest, TST = Contest, QP = QSO Party

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Ashtabula HF (July 30)	1	2	3	4	5	Columbus, OH HF Rochester, NY SE National Lighthouse Day SE VJ Day Anniv. SE
6 National Lighthouse Day SE VJ Day Anniv. SE ARRL UHF TST ORP ARCI TST	7 ARRL UHF TST ORP ARCI TST	8 Erie County (OH) SE	9 Erie County (OH) SE	10 Erie County (OH) SE	11 Erie County (OH) SE	12 Erie County (OH) SE Denver, CO SE Highest PT in PA SE Great NM Chile Chase Chase TST Maryland QP
13 Erie County (OH) SE Denver, CO SE Highest PT in PA SE Great NM Chile Chase Maryland QP	14	15	16	17	18 CNE (Toronto) SE	19 Batavia, NY SE CNE (Toronto) SE European DX TST NJ QP KCJ TST North America QP SARTG RTTY TST
20 Warren, OH HF Batavia, NY SE CNE (Toronto) SE European DX TST NJ QP KCJ TST North America QP SARTG RTTY TST	21 CNE (Toronto) SE	22 CNE (Toronto) SE	23 CNE (Toronto) SE	24 CNE (Toronto) SE	25 Washington, DC SE CNE (Toronto) SE	26 Chaffee, NY HF CNE (Toronto) SE Summer ORP Party WV QP
27 CNE (Toronto) SE Summer ORP Party WV QP	28 CNE (Toronto) SE	29 CNE (Toronto) SE	30 CNE (Toronto) SE	31 Corvette Homecoming Bowling Green, KY SE CNE (Toronto) SE		

ATTENTION ALL AMATEURS!!!

UPGRADING? WANT TO UPGRADE? CW A CHALLENGE? MEMORIZED YOUR CODE TAPES? NOW THERE'S HELP! WEDNESDAY NIGHTS AT 7:00 YOU WILL FIND 5 WPM PRACTICE QSOs ON 146.550 (SIMPLEX).

KB3A AND N3TIL ARE PROVIDING CODE PRACTICE FOR ALL LOCAL AMATEURS (AND PROSPECTIVE AMATEURS!) STOP BY FOR A WHILE AND IMPROVE YOUR SKILLS.



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Art Paavola, D.V.M. Tom McClain, D.V.M. Jeff Paavola, D.V.M.

The Finagle Factor

A mathematical notation of Finagle's work has been developed. Here, however, there seems to be some confusion, because two other names enter the picture: "fudge" and "diddle" factors are also used to considerable advantage by scientists and engineers.

Years ago - when the universe was relatively easy to understand - the Finagle factor consisted of a simple additive constant (sometimes known as a variable constant) in the form:

$$X' = Kf + X.$$

where any measured variable, X, could be made to agree with theory, X', by simple addition of the Finagle factor, Kf.

Later difficulties couldn't be solved so easily and so a fudge factor, Kb, was added.

$$X' = Kf + KbX.$$

Powerful as this adjustment was, World War II studies in servo theory indicated a need for a still-stronger influence. The diddle factor, Kd, was born and made to multiply the quadratic term.

$$X' = Kf + KbX + dX^2X.$$

It is felt that, at least at present, reality can be made to conform to mathematical theory with reasonable agreement on the basis of these three factors.

However, John W. Campbell feels there is a different basic structure behind the Finagle, fudge and diddle factors. The Finagle factor, he claims, is characterized by changing the universe to fit an equation. The fudge factor, on the other hand, changes the equation to fit the universe. And finally, the diddle factor changes things so that the universe and the equation appear to fit, without making any real change in either.

For example, the planet Uranus was introduced to the universe when Newtonian laws couldn't be to match known planetary motions. This is a beautiful example of the application of the Finagle factor.

Einstein's work leading to relativity was strongly influenced by the observed facts about the orbit of Mercury. Obviously a fudge factor was introduced.

The photographer's use of a "soft-focus" lens when taking portraits of women over 35 is an example of the diddle factor. By blurring the results, photographs are made to appear to match the facts in a far more satisfactory manner.

To our knowledge, this is the first clear enunciation of the scientific method. All our vast sum of human knowledge has been derived with these as the basic tools. By having them in writing for the first time, perhaps our children can build even better futures than the best we envision today.

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10

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In the West County Health Center

Minutes

Radio Association of Erie Membership Meeting July 6, 1995

N3LPO President, Sue Seyboldt called the meeting to order at 7:30 p.m.

N3TOZ received a nice round of applause for upgrading to HF Tech.

WB3EZY Red motioned to approve the minutes as printed in the June QUA-RAE, seconded by KB3A Chris.

KB3ALT Karen Treasurer, itemized the cash flow report for the month of June.

W3GZO Dick Vice President, reported that the process of organizing an Election Committee was well underway and would like to see some more participation. The By-Laws call for 2 nominations per office, so if you think you can handle the job, or know of someone who can, lets get them nominated.

N3FAW Bob Membership Chairman tallied 183 full members, 39 associates, 26 life time, for a total of 248.

N3NTJ Matt Public Service Chairman, passed around a sign up sheet for the Quad Races in Edinboro on July 23rd from 1-5 p.m. Matt reported that the VE exams at Gannon are always scheduled for the 3rd Saturday of the Month with August 19th the next available date.

W3GZO Dick, Education Chairman, announced tentative plans for the classes to start the second week in September through the third week in November, probably on Monday and Wednesday from 7 p.m. to 9 p.m. KB3A Chris and N3TIL Debi have taken on a personal education mission to help hams upgrade, and are working on 5 wpm code tapes to send CW on 146.55 simplex. The schedule will be printed later in the QUA-RAE. K3GYD Don will also assist the education program by reviving a time honored "Elmer" group to work with new licensees regarding technical help and operating procedures. This year's Education Program is shaping up, early on, with lots of fine backing. So, all you instructors and returning Elmers, lets get some hocks behind those hamss!

N3LKW Sandy explained that she and N3TIL Debi have been actively soliciting donations from area business' and there has been tremendous interest. Some small funding was requested to mail flyers to donors for display on their bulletin boards or break rooms. A mailing list does exist and they were given the nod to proceed with their (much appreciated) Hamfest efforts.

N3NTJ Matt has located two more prospects for Skywarn basic training, bringing the total to eight. Six are required to make it worth while for Cleveland to return for classes.

N3HPR Tom reported that the Hamfest Committee met an hour before the RAE with everything going as planned. All prizes are purchased. Tickets will be mailed out in mid July

to all members and all are encouraged to purchase the \$20 packet. KB3AAW Richard will be in charge of parking. VE tests will be given at the Franklin Center United Methodist Church on Hamfest morning. N3TIL Debi circulated a sign up sheet for kitchen help. N3FAW Bob mentioned that the committee is interested in donations that anyone is willing to make to be sold by the club at the RAE table. N3LPO Sue announced that a handmade quilt will be donated again this year by Barb Tousey of East Springfield and XYL of WB3EZY Red, who now serves on the Board of Directors. Tickets will be sold for the quilt at the Hamfest, then it will be raffled off at the Christmas party.

W3HDI Doug Maddox, longtime sponsor of the PA QSO party has been confirmed as the featured speaker at the dinner/symposium at the Best Western following the Hamfest. Cocktails start at 5 p.m. Dinner is in a private room at 5:30 p.m. N3HPR Tom is taking reservations. Dress is casual. The committee is utilizing the PA QSO Party mailing list to send flyers with hope of drawing officials to our Hamfest.

W3CG Norma announced the results of the last test sessions at Villa Maria and the next exams to be held August 5th. The new advanced tests are in, and the study material is also now available.

N3HPR Tom is making plans for an ARES meeting in October with a high powered speaker. There will be an upgrading of ARES photos at that time. ARES forms are always available to anyone with an Amateur Radio license.

N3LPO Sue announced the club picnic time was changed to noon-6 p.m. on Saturday, July 22nd at WB3IET QTH of Vern and June Beard. Approximately 20 signed up at the meeting with phone reservations being taken by Sue and Ron WB3DOM, Picnic Chairpersons. In case of rain, there is a double garage and canopy. It the weather becomes too adverse, the picnic will be postponed until the next day, July 23rd with afternoon hours. Children's games are planned.

N3LPO Sue thanked all those who helped with Field Day and nonplused that more did not participate, expressing 'no involvement'... 'no complaints' and that's as polite as it gets. We all want to have fun and Field Day was a way of starting it.

KB3BAM Jeremy conducted the 50/50 drawing totaling \$53. N3MLX Joe...the 50/50 winner received \$26.50.

N3HPR Tom.....won the T-Shirt.

WB3EZY Red made the motion to adjourn, seconded by N3LBI Bob at 8:05 p.m.

Respectfully submitted, W3JOV, Secretary

3

By N3PYH, DAVE ROSS

Traveling always presents great opportunities to combine radio with lots and lots of available time and new people to meet. I tried to take advantage of this early in July with a week in Maine and the New England states. (Besides, the picket fencing of the squelch on the 2 meter rig breaking in and out is a great way to keep your wife awake...)

Figuring on tons of similar amateurs traveling on the highways, I put my call in big letters in the back window, along with 146.52. Pretty self explanatory, I figured. About 1,800 miles and a couple of thousand CB radio antennas later, I decided that either there we no hams on the road or they all had their nose on their VFO and not my back window. While striking out on getting a call, I had a bit more success making some simplex CQ's. With an occasional call as we traveled across the northeast, I was able to make contact and then ask to move to a local repeater. It's a lot easier to have the local pick the good machine than trying to read the repeater book at 70 miles an hour while swatting at the kids.

For the most part all the repeaters I worked were "friendly", with a good local group happy to say hello. Northern Massachusetts had plentiful coverage, but the hills wreaked havoc with my ability to get into them reliably. It teaches timing...try to finish your side of the conversation while cresting the hill, and hope that the station you're working times it right as you go up the next hill...and at the same time you hope you're getting closer to the repeater, not further away. The hills must present some real challenges to the locals in Vermont/New Hampshire area. I'll bet you learn pretty quickly which hill gets you into which machine, unlike here where '61 or '64 provide pretty universal coverage.

Also interesting was the familiarity with Erie (or lack thereof). Some people all through New England would talk about Erie, mentioning Kearsarge or 54th street, for instance. Others would say "Erie, Pennsylvania? Oh, I just worked a station there near Philadelphia last week..." and you debate whether to try to explain Erie as in "Lake" Erie, or let it go. But by then you were probably at the bottom of the hill anyway so the point became moot.

A one and a half hour traffic jam in the stretch from Massachusetts to Maine gave a chance to have some fun and shorten the wait with a couple of amateurs from Rhode Island and southeastern PA. I was lucky enough to be in the front of the pack, and we placed our positions using broken down cars along the road as benchmarks; "...just passing the Cherokee on the right, about 5 minutes behind you..." I was also able to help them find their exit, but warned them not to be too explicit about where they were going or the home-made meatballs waiting for them would be gone 5 minutes before they got there.

Finally hitting the Brunswick (Maine) repeater was kinda like seeing the ERIE, PA signs on your way home, it makes it seem like you are finally there. Marine Mobile seems to be the rule, but most people along the coast have one car and three boats, so that only makes sense.

A Wednesday night net broke up the monotony with a rebroadcast of the *Amateur Radio Newsline* over the repeater. Its really enjoyable to sit back while driving and hear quality amateur news. Its the first I ever heard *Newsline*, and it was a real pleasure. They also had a CW lesson (the first half of 'M' is DAHHHHH).

Guess you had to be there.

My HF rig is a lot bigger than the newer rigs, between the power supply, VFO, and transceiver, so I took my little Sangean receiver with me to try to copy either the Fort Pierce connection or the Novice Net. Unfortunately (for me) 10 meters was wide open even on the little indoor telescoping antenna. Not having had a chance to enjoy 10 meters at its peak, I try to get on the band whenever it opens up, and it sure was open up there....and all I could do was listen. I was also eyeing up the area...all solid rock right to the surface, and where it's not rock it's salt water. (question: does solid rock provide a better or worse ground plane than clay? Antenna/propagation experts -- think about it...).

The "lady of the house" was pretty intolerant about "all that static", so I imagine working CW at midnight would not have gone over too well. Come to find out, her husband (my wife's brother-in-law) used to be a Novice that let his ticket expire, but he climbed up into the attic to pull out an old Hallicrafters himself.

The Fourth of July found me watching a parade in Bath, and as luck would have it we sat nearly right in front of some kind of antique store. Now remember, antique stores are more common in New England than 7-11's, so you don't normally get too excited about them. Except this one was called Radio Dreamland, and was full of every radio buff's favorite collectibles, from Hallicrafters of the 50's to unlabeled antiques that I couldn't identify. The owners of the store weren't too knowledgeable about what they had, and when they saw the HT on my belt they assumed me to be an expert (hah! fools...). By the way, I left an absolutely mint in appearance but slightly ill Hallicrafters receiver there, overpriced but boy was it clean...

And I understand that our host (the former ham) went back to "Radio Dreamland" again after we left, no doubt, like me, to turn the knobs and imagine the DX broadcast stations from 60 years ago....before either of us were born.

1995 HAMFEST COMMITTEE

PLEASE VOLUNTEER TO HELP YOUR CLUB

R.A.E. BOOTH: BOB N3FAW 866-3027, BOB KB3ALY 866-2424

MAILING: DAVE N3EOY 734-4623

TAILGATING: ERIC N3HUM 455-5222, DICK W3GZO 833-7444

EDUCATION/DISPLAY: STEVE N3SRD 774-0147

SETUP/CLEAN-UP: DAVE N3PYH 454-5407

TICKET SALES(INSIDE): PAUL N3UMM 739-2814

PRINTING/DESIGN: TONY WB3KGT 864-4545

PARKING: RICH KB3AAW 734-3979

TICKET SALES(OUTSIDE): CLIF N3BZL 474-1179

PRIZES: CHRIS KB3A 474-1211

ADVANCE TICKET SALES: TOM N3HPR 833-1640

INFO/TALK-IN: TOM KB2OUA PAGER 451-4043 TYPE 146.61, JOE KB3ALLU 825-4333

EXHIBITORS: DENNIS KA3WYO 725-9393

VENDOR SET-UP/PARKING: RON WB3DOM 456-0500

How About This For A Easy Method Of Grid Square Calculator?

You will need your longitude and latitude to the nearest degree.

First your longitude:

1. Convert the minutes portion of the longitude from minutes to decimal by dividing by 60.
2. For North America and locations of West longitude, subtract your longitude from 180 degrees. For location of East longitude, add 180 degrees.
3. Next divide this value by 20. The whole number result will be used to determine the first character of your grid, as follows:
0=A, 1=B, 2=C, 3=D, 4=E, 5=F, 6=G, 7=H, 8=I, 9=J, 10=K, 11=L, 12=M, 13=N, 14=O, 15=P, 16=Q, 17=R, 18=S.
4. For the third digit, multiply this last number by 10. The digit immediately before the decimal point is the third digit of your grid.

Now use your latitude.

1. If your latitude is North, add 90. If your latitude is South, subtract your latitude from 90.
2. Divide this number by 10. The whole number result will be used to determine the second character of your grid as follows:
0=A, 1=B, 2=C, 3=D, 4=E, 5=F, 6=G, 7=H, 8=I, 9=J, 10=K, 11=L, 12=M, 13=N, 14=O, 15=P, 16=Q, 17=R, 18=S.
3. Now, multiply this number by 10. The digit immediately before the decimal point is the fourth digit of your grid.

George Fremin III, WB5VZL, Austin, Texas C.K.U.

Volunteers Needed...

Horse Trials

August 19, August 20, Edinboro

Hamot Time Trials

September 10th

MDA Walk

September 24 8:30 AM
Presque Isle

Crop Walk

October 1, 1-3 PM, Presque Isle

Alzheimers Memory Walk/Run

October 7 9:30 - 12:00, Presque Isle

First Night Erie

December 31 (New Years Eve) 4 p.m - Midnight
Downtown Erie

To volunteer contact **Matt, N3NTJ**, at 864-3809, or after the Sunday 2 Meter Nets, or sign up at a **RAE Club Meeting**. Or E-Mail **Matt** at **N3NTJMATT@AOL.COM** or **WB3DWL@KNIGHT.GANNON.EDU**

DOUBLE BAZOOKA/COAXIAL DIPOLE ANTENNA by Morris Lundberg, K4KEF

Eighty meters is 500 KHz wide, from 3.5 MHz to 4.0 MHz. Your typical, standard dipole antenna will show a bandwidth of about 50 to 100 KHz. That means that you'll have to resonate it at the high or low end of this band, to have a 2:1 or less SWR over the frequencies you wish to operate. So you tune it to the CW or Voice portion of the band. Wouldn't it be nice to have an antenna that was resonant in the center of the band and had an SWR of 2:1 or less across the entire 80 meter band?

Enter the Coaxial Dipole Antenna (alias "Double Bazooka"). This antenna is broadband; it will cover the entire 80 meter amateur band with an SWR of 2:1 or less. The "Bazooka" antenna was developed by the staff of M.I.T. for radar use. The original "Bazooka" used coaxial cable for the entire radiating elements. The adaptation used by most amateur operators uses coax only for the broadbanding portion of the antenna, while the remaining portion of the elements are constructed of twinlead or ladder line. Ladder line is preferable for its inherent strength.

This is a single band antenna. It will not radiate harmonics of your operating frequency. In addition, there is very little feedline radiation, which is great for those who have problems with TVI. Its broadband characteristic makes it ideal for 80 meters and 10 meters. On the other hand, a separate antenna is required for each band. The Bazooka antenna consists of a half-wavelength of coaxial line with the outer conductor opened at the center and the feedline connected to the open ends. The outside of the coax and the ladder line operate as a half-wave dipole. The inside of the coax elements, which do not radiate, are quarter-wave shorted stubs which present a high resistive impedance to the feed point at resonance. Off resonance, the stub reactances change in such a way as to cancel the antenna reactance, thus increasing the bandwidth of the antenna.

The SWR at resonance on 80 meters (3.75 MHz) is 1.2:1 and that the SWR at the band edges is about 2:1. The antennas were installed at a height of about 25 feet (unfortunately, I have no trees for supports) and the axis of the antenna elements were at 90 degrees with respect to each other. The 40 meter antenna used TV twin-lead for the ends of the elements. Both antennas used Tandy RG-58/U coax for the broadbanding elements and the feedline. Apparently the Tandy coax I used had a velocity factor of 0.64, since the resonant length turned out to be 84 feet on 80 meters (as compared to the calculated 87 feet). More expensive coax may have a more consistent velocity factor.

At the very center of the coax used in the elements, very carefully cut away about one inch of the outer vinyl jacket. Then cut the exposed shield all the way around at the center of the exposed area. Be careful that you do not cut the dielectric material or the center conductor in the process.

Twist the two pieces of exposed shield into small pig-tails. These are the feed-point terminals for the antenna. The center conductor of the feedline is soldered to one and the shield of the feedline to the other. Now solder the center conductor and shield together at each end of the antenna element. Solder the two ladder line wires to the end of the antenna element. At the other end of the ladder line, solder the two wires together. The ladder line now appears to the antenna to be a very thick extension of the radiating element, contributing to broadbanding the antenna.

I've solved the mechanical strength problem by using a square piece of plastic at the antenna center, drilling a small hole on each side of the coax, wrapping a small wire around the coax and through the holes and twisting the wire together on the other side. After this, a small amount of quick setting epoxy secures the coax to the plastic support and prevents the wire from untwisting. Once the antenna elements and the feedline are secured to the plastic square in this way, the plastic square takes the strain, protecting the delicate radiating element feed-point.

A thorough coating of silicone rubber or epoxy seals and protects the feed-point from the weather. A similar technique at the point where the ladder line is soldered to the shorted end of the coax provides strength and a weather-tight seal.

I've constructed several of these antennas and they have all performed as expected. The quality of the coax used seems to have little effect on the antenna's performance. I've found that Tandy coax will work well in this application. RG-58/U was the coax of choice for small size and light weight. There is no reason, however, that RG-8 coax wouldn't work as well or better. It's larger surface area would probably provide better low signal level reception. Its large size would make it more obvious to the neighbors and its larger weight might be a problem in your installation. Its larger diameter conductors would, certainly, take more stress and strain than RG-58.

Eventually, the outer black vinyl coating on cheaper coax will migrate into the inner dielectric material, contaminating it. As is true with any cheaper coax, this changes the properties of the coax, i.e., impedance, loss and velocity factor. Over the long term, the exposure to the sun's ultraviolet rays cause this contamination of coax which hasn't been constructed to prevent it. For that reason, you may wish to use non-contaminating coax, such as RG-141 or RG-213. After several years of exposure to all kinds of weather, however, my Double Bazooka's show little degradation in performance, using Tandy RG-58/U coax (Radio Shack).

The "high-point" of the trip was a ride to the top of Mount Washington, in New Hampshire. At about 6,300 feet at the peak, its pretty impressive to someone who's never been further west than Kansas. I had a chance to ride to the top on a motorcycle about 8 years ago, but ever since getting my ticket I've wanted to go back up and play a little radio from the top.

The ride up was exciting for the kids, with the trees getting shorter and shorter until they completely disappear somewhere near the top. The mountain is known as having the worst weather in the world, and the highest wind speed known by man was recorded on the hilltop, at 231 mph before the anemometer froze solid. Despite having the potential for lousy weather, the temperature was approaching 60 and the winds were only about 17 mph, actually a nice break from the 90 degree temperatures at the foot of the mountain.

The summit is also home to an amateur repeater and a commercial television transmitter, in addition to a weather station and research facilities (and the requisite gift shop). The first thing I learned is that the summit is not the place to make a contact. I'm not sure whether my HT was desensed by the commercial transmitter or by every other radio signal known by man, but I could hear absolutely nothing at the top. The S-meter was fully lit, but the squelch never broke. I imagine I left a few people frustrated as I put out a CQ over and over but never answered their response.

The solution was to use the mobile in the car, about 75 feet down from the peak. Between the better rejection and the protection from the solid rock, I had terrific coverage into the east coast. Nearly every frequency had activity on it, and some of the more popular repeater frequencies had three or more repeaters keyed up at the same time.

I scanned the memory and found I could hit the coastal repeater in Brunswick full quieting with 10 watts (I was working the weak side of my antenna footprint). With the assistance of the repeater trustee, I made an autopatch call to our guests in Maine, to say "hi" from the top of Mt. Washington. Coming back to that frequency about 10 minutes later found a QSO underway between the repeater owner and a ham from Yarmouth, Nova Scotia. Flipping over to the input, I found the VE1 station about an S5, and luckily they were finishing up their QSO at the same time. I called him and asked to try a simplex QSO. 15 minutes later we had completed a terrific simplex QSO from New Hampshire to Nova Scotia, which looked to be about 250 to 300 miles. He was running an Isopole, and I had a 1/2 wave glass mount antenna. He was a pretty new ham, and was on the air right then because his 10 year old daughter wanted to see "how far he could talk". He said his location was pretty high, actually, at 120 feet above sea level.

For a QSL I went to the gift shop and sent a Mt. Washington postcard from the summit post office. I can picture the card

being on display at his station for quite a while, and it was fun for both of us. What a great special event location!

I imagine the locals get pretty tired of the tourist amateurs at the top of the hill, but it sure was a lot of fun for me. I would love to be able to spend a whole day with a beam and work the entire coast. Now I'm just trying to figure out how to put up a 6,000 foot tower. (I added it up. That's only 150 forty foot towers...maybe if we all pool our towers for one big effort. The guys would have about a two mile span, though. Lessee, the sum of the square of the edges equals the square of the hypotenuse, so that would be a 4.6 mile long inverted V, with 2.3 mile legs. hmmm....)

By the way, WH6KQ tells me he winter camped on the Presidential ridges, where he learned the importance of sleeping with his boots. Then he moved to Hawaii....

Saturday morning found us traveling through Vermont, an area God must have made after he'd practiced on the rest of the world.

I think I could really like Vermont.

But Vermont poses some real public service challenges. I brought up one of the local repeaters on the way south, and after a couple of calls had a response and an unnecessary apology. It seems that there was a 100 mile bike ride that the local club was providing communications for. They had planned on simplex, but were having major problems trying to make the relays. It sounded like several relays were necessary to make the trip, but there was always one weak link in the communications chain where they were not able to finish the traffic. The hills in Vermont are not exceptionally tall, and all of about equal height, rolling endlessly across the state. It was these same rolling hills that were giving the amateurs fits...someone would always find themselves in a dead spot at one time or another, effectively breaking the chain. Sometimes flat is good...

To finish up the trip I had an answer to my '52 CQ call west of Rochester, and had a great time moving from simplex to two different repeaters as I came into and passed Buffalo. I had a chance to hear all about the weather balloon launch scheduled for the Batavia Hamfest, including the planning and teamwork necessary to pull it off (or push it up, as it were). It's conversations like those that really get the creative juices flowing...now we need to get our most creative members (that's all 220 of you) thinking about what we can do here to stimulate some excitement in radio.

If you've done something different with the hobby lately, share it with the rest of the group. Climbed a hill, ridden a great 6 meter opening, brought an old AM transmitter back from the grave, designed an 18 db gain mobile antenna...whatever, share it with the rest of us. There's a lot of exciting stuff happening out there, let's not isolate ourselves!

Contests

CONTESTING - PA QSO PARTY STYLE Part 2
by Chris Robson KB3A

In this issue we will discuss some the contest aids available to Amateur Radio Contesters and Operators. In the past (not so long ago), we hams had to keep a log of our activity on the air. This was waived by the FCC a number of years ago (imagine the log book some guys would have on 2 Meters!!). Today, most logging by hams is still done when operating the HF bands, whether it be on an old log book (which I still do for casual QSOs) or done on computer with logging software.

This leads to one of the aids used for contesting, the Computer. For anyone doing the Pa QSO Party in the early 80's, most can remember using the log sheets supplied by NARC (sponsors of the Pa QSO Party). There were a few of us that had computers at the time and used the computers for "dupe" (duplicate contacts) checking after the contest was over. I had spend many evenings duping logs for club members, trying to read the frantic chicken scratch of hand written logs. Today, contesting with a computer is online during the contest, so everything is neat and clean and completed in short order (last year my Pa QSO Party log was totally complete less that One hour after the contest!!).

There are a number of very good contest programs available to hams. The one I presently use for general contesting is the N6TR LOGGING Program. This program is Free on the ARRL BBS or See me and I will gladly share this program with you. Another general contest program available is the K1EA program which is advertised in the ham magazines and cost about \$70.00, but is a great program with many features.

In regards to the Pa QSO Party, there are a number of good contest programs dedicated to the Party. The program I am most comfortable with has been the KM3D program. The KM3D program does the logging in numeric order by band and mode, also remembers the county a station was in and automatically enters the county when you contact the same station on a different band or mode. It's only drawback is it doesn't send CW exchanges. There is another program which is very similar to the N6TR Contest program which is just for the Pa QSO Party that also can send CW. This program was used by WB3DOM and K3GYD and they can expand on it's capability.

There are other programs available, but generally do the same as the two mentioned above. Other aids for working contests is to review the results of the contest from the previous year. In careful study, you can see where the top stations spent most of their effort and also review what counties that were "rare" or hard to get. By reviewing the results you can set your personal goal, whether it be bettering your score from last year or beating out a club

member or going for the top prize in one of the many divisions. I believe one of the reasons the Radio Association of Erie won the Club Competition in the mid 80's was because of the intense competition among a few of the members. There is nothing better than "beating your buddy" in the contest!!

Operating aids such as a good set of headphones go a long way in making your contest activity more comfortable, also jams the signals into your brain easier. Headphones that don't fit well or make your ears hot will not do in a contest and will make any operating a painful experience. Getting a boom mike which attaches to the headphones is an ideal way to help in organized operation, by using VOX, this will free the hands to do writing or typing of the log info. Telex and Hiel make headphone/mike combinations which are made for communication grade audio. Stereo headphone, for the most part, are not good for communication audio due to their wide frequency response.

A good CW keyer is like a good pair of comfortable shoes, you count on them, abuse them, and they just "feel" right. I have used a Bencher paddle for years and have customized mine with buttons to activate my memory keyer from the paddle (I used to sell them under the name "Contest Paddle Base"). Keyboard CW is now becoming the norm in CW contesting, using the computer software to send CW and log stations.

Other aids used in contesting are voice tape loops and voice keyers (one is offered by MFJ). This is great for saving the voice box, especially near the end of the contest when the throat gets dry and hoarse and words start to run together. Simple tape loops are easy to make and most modern rigs have audio in ports to plug in a tape recorder to run the loop.

One last aid which sometimes is overlooked is a comfortable chair. Some vinyl covered chairs can become very uncomfortable over a long period of sitting, and you might feel a little soggy after a while. Also some reclining chairs don't offer the right posture needed to reduce the fatigue over long contesting periods. Find a chair with a fabric covering and will keep you upright, this will not only help your operating, you will feel better days after the contest.

One final note for this issue, please read an article in August QST on page 64 called the Casual Contester, its very helpful to anyone just getting into the sport of contesting. For the next issue I will expand on what to look for during the contest and some operating tips for the Pa. QSO Party.

Amateur Satellites

By Bob Reisenweber, W3BBO

In last month's issue of QUA-RAE, we presented two low earth orbiting satellites, RS-10 and RS-12. While operation on RS-10 requires a two meter CW/SSB transmitter, RS-12 requires an Advanced or Amateur Extra class license to operate the satellite.

How about FM or Packet? Are there any satellites where operation without specialized equipment or upgrading class of license? The answer to both is yes! AO-27 is basically a FM repeater and DO-17 is a digital satellite you can copy with your terrestrial packet radio.

First AO-27. This satellite was launched in the Fall of 1993 and its original purpose was to be a 9600 psk digital bulletin board. However, after its launch many problems were experienced and after repeated software crashes, the control operators have put the satellite on FM voice.

Acting as a flying single channel repeater, AO-27 is providing interesting contacts while overhead. The uplink (transmit) frequency is centered on 145.850 Mhz, while the downlink (receive) frequency is about 436.800. I say about, because the doppler shift moves the signal from approximately 436.810 down through 436.790 Mhz or so during the pass.

Stations have been reported working through the bird using their dual band mobile radios. This is an easy one to work, provided the "power" stations are taking a break. Having only one channel makes operating this bird difficult at times, especially if there are lots of stations trying to work through it.

DO-17 was launched with the purpose to provide an easily received signal for educational purposes. The common name is DOVE, for "Digital Orbiting Voice Encoder". Messages are sent to the satellite by the control operators in Brazil and replayed on 145.825 Mhz FM.

NK6K Explains Some Of DOVE's Telemetry Format

The LSTAT line is sent by the loader portion of PHT (the loadercommand/telemetry task). It purpose is to show the state of the software loader process so that if something goes wrong during upload, the DOVE ground command stations can tell what needs to be done to continue the process.

The LSTAT line comes in two types, as shown below.

I P:0xhhhh o:n l:nnnn f:nnn, d:n st:n (....or)
A: 0xhhhh, P:0xhhhh, o:n l:nnnn f:nnn, d:n st:n

I - means there is no software load in progress (inactive)

P - the segment of the running program (PHT). The initial load of PHT is always at 0x3000. Any other address here means PHT has been reloaded.

A - means a software load is in progress (active). hhhh is the segment address of the program being loaded.

o: - The number of times the HDLC output queue was full when PHT tried to send a frame. This is left over from debugging the only major bug found

I remember copying the audio message "one small step for man.." during the Apollo anniversary. However, the telemetry can be copied with your terrestrial packet station.

A sampling of the telemetry follows:

```
SWITCH">SWITCH <DM>
SWITCH"&>SWITCH <DM>
DOVE-1"&>TLM <U>:
00:58 01:58 02:88 03:36 04:57 05:58 06:6C 07:52 08:70 09:70 0A:A2
0B:FC 0C:E8 0D:DB 0E:96 0F:25 10:E6 11:AC 12:01 13:E6 14:A0 15:B6
16:62 17:5E 18:5F 19:62 1A:5F 1B:01 1C:66 1D:91 1E:DC 1F:63 20:D6
DOVE-1"&>TLM <U>:
21:D3 22:7F 23:14 24:0D 25:2C 26:13 27:00 28:01 29:00 2A:00 2B:5F
2C:00 2D:60 2E:45 2F:A5 30:D3 31:A5 32:01 33:00 34:A8 35:A8 36:A8
37:AA 38:90
DOVE-1"&>STATUS <U>:
80 00 8D CE 18 EE 02 00 90 00 00 0C 0F 3C 05 0F 31 01 0B 52
DOVE-1">LSTAT <U>:
I P:0x25B2 o:0 l:3837 f:6778, d:0 st:0
SWITCH"&>SWITCH <DM>
DOVE-1">TIME-1 <U>:
PHT: uptime is 391/01:41:51. Time is Thu Jul 06 15:48:20 1995

SWITCH">SWITCH <DM>
DOVE-1"&>STATUS <U>:
80 00 8D CE 18 EE 02 00 90 00 00 0C 0F 3C 05 0F 31 01 0B 52
DOVE-1">BRAMST <U>:
9th May 1995 13:04 UTC
```

Dove's voice experiment remains OFF.

Due to seasonal power variations the S Band TX has been turned OFF.

73 Dove Command Team <vk7zbx>

```
DOVE-1">BCRXMT <U>:
vmax=764293 battop=766771 temp=119813
DOVE-1">LSTAT <U>:
I P:0x25B2 o:0 l:3837 f:6778, d:0 st:0
SWITCH">SWITCH <DM>
```

in the I/O drivers since launch. A bug occasionally caused a 65,535 byte frame to be sent, filling the output queue for nine minutes. This should always be zero.

t: - The largest free memory block, in decimal paragraphs. To find the number of free bytes in the largest block, multiply this number by 16. This number shows the largest program that can be loaded at that time.

f: - The total amount of free memory, in decimal paragraphs.

d: - The digipeat flag, 1 is digipeat on, 0 is digipeat off. (Will always be off for DOVE)

st:- The task number of the last task loaded.

We hope those of you with packet capabilities, will monitor DOVE and enjoy the seasonal voice messages.